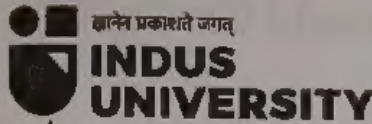


Enrollment No: _____



INDUS UNIVERSITY IITE
Constituent Institutes of Indus University

X/EC0319/002

Semester:	III	Branch:	EC/CSE/CE/IT
END SEMESTER EXAMINATION - December 2022			
Subject Code:	EC0319-	Subject Name:	Digital Electronics
Date:	08/12/2022	Time:	2:00 PM - 5:00PM
Day:	Thursday	Total Marks:	100

Instructions:

1. Attempt all questions
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicates full marks

Q.1 A i. Convert the $(126.25)_{10}$ into binary, octal, hexadecimal. **10**

ii. Perform following Binary addition & Subtraction:

- a) $1011+1101+1001+1111$
- b) $1100.10 - 111.01$

B i. Prove the following Boolean Expression: **10**

- a) $AB + A'C + BC = AB + A'C$
- b) $AB'C + B + BD' + ABD' + A'C = B + C$

ii. Simplify following Boolean Expression:

- a) $[(A+B')(C+D')]'$
- b) $A[B+C'(AB+AC')']$

Q.2 A i. Implement following logic using only NAND Gate. **10**
 $F = (A+B')(CD+E')$

ii. Expand $A(A'+B)(A'+B+C')$ to Maxterm & Minterm

B Obtain the simplified expressions for the Following Boolean functions: **10**

$$F(A,B,C,D,E) = \sum m(0,2,3,10,11,12,13,16,17,18,19,20,21,26,27)$$

Q.3 A i. Design 2 to 4 line decoder using truth table, logic equation & logic diagram. **10**

ii. Design 2 bit magnitude comparator with truth table, logic equation & logic diagram.

- B** Convert D flip flop to S-R flip flop **10**
- Q.4 A** Design 4 bit Serial-In Serial-Out Shift Register with D flip flop & S-R flip flop. **10**
- B** Design D type counter that goes through 0,1,2,4,0. Unused state must always go to 000. **10**
- Q.5 Any Four (05*4=20)**
- A** Implement the following logic function Using 8*1 Multiplexer: **05**
 $F = \sum m (1,3,4,11,12,13,14,15)$
- B** Design 4 bit parallel binary subtractor circuit. **05**
- C** Design Positive edge triggered J-K flip flop using truth table, logic equation & logic diagram. **05**
- D** Design 4 bit Parallel-In Parallel-Out Shift Register. **05**
- E** Design two bit ripple up counter using negative edge triggered flip flop. **05**
- F** Design Mod 6 asynchronous counter using T flip flop. **05**

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